^{140}Ce(α,^{3}He) 2008Ka01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 187,1 (2023)	12-Oct-2022

2008Ka01: E=51 MeV beam provided by Yale tandem accelerator. The reaction products were analyzed with an Enge magnetic split-pole spectrometer. The ^{3}He ions were isolated by a gas-filled ionization chamber and plastic scintillator at the focal plane of the Enge spectrometer and using E-ΔE technique. Angular distributions were measured at 6°, 11° and 20°. Resolution (FWHM)=70 keV. DWBA analysis.

Absolute cross sections have typical uncertainty of ≈7% while relative values are accurate to 5%.

This work focuses on measurement of $i_{13/2}$ and $h_{9/2}$ single- neutron strengths for N=83 nuclides. From cross section data, matrix elements were also deduced for $f_{7/2}\otimes 2^+$ (vib.) and $f_{7/2}\otimes 3^-$ (vib.) configuration mixings.

^{141}Ce Levels

Σ[C^2S]: 0.92 *13* for $h_{9/2}$, 1.01 *14* for $i_{13/2}$.

Centroid energy (keV): 1447 *10* for $h_{9/2}$, 1702 *52* for $i_{13/2}$.

E(level)†	J^π†	L	C^2S‡	Comments
1354.52 *9*	$9/2^-$	5	0.67	dσ/dΩ (mb/sr)=0.54 at 20°, 0.21 at 30°.
1368.7 *2*	$13/2^+$	6	0.79	dσ/dΩ (mb/sr)=1.01 at 20°, 0.57 at 30°.
1693.3 *1*	$11/2^-$	5	0.25	dσ/dΩ (mb/sr)=0.15 at 11°, 0.13 at 20°, 0.08 at 30°.
2899 *2*	$13/2^+$,$11/2^+$	6	0.22	dσ/dΩ (mb/sr)=0.44 at 6°, 0.31 at 11°, 0.15 at 30°.

† From Adopted Levels.

‡ Typical uncertainties are 10% based on relative cross sections and analysis using a variety of optical parameters listed by 2008Ka01.